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Perspective

Animal Identification

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As per the Livestock Census of 2019, current goat population in India is about 148 million and that of pigs are 9.06 million in India. They are identified using physical tagging, stenciling, tattooing, branding, etc. that can easily be manipulated extravagantly creating opportunities for poachers and middle men to poach the animals for their bones, meat, etc. and illegal transfer across international borders. However, to prevent this, a unique, non-invasive, non-manipulative method of identification based on behavioral patterns must be incorporated, also termed as biometrics. Such unique character trait or 'fingerprints' become a mandate in the process of unique animal identification. Several character traits have been examined and investigated to develop the unique identification and has later been proved that irises of goats and auricular vein pattern of pigs have been found to be the most feasible one in such identification.

The basic steps of image acquisition, image segmentation, image normalization, feature extraction and encoding for the generation of templates have been followed in processing such digital image acquired under the defined conditions of the image acquisition standards for each respective case. When the problem of individual identification has been sorted, the technology extrapolated in identifying the different breeds of goats and pigs using different architectures of Neural Networks and other Supervised Learning paradigms.

Soon after the weaning stage of 15 - 20 days, the iris images of goats stabilizes and remains constant throughout the life. The primary vein pattern of the auricle of pigs also remain fixed throughout the lifetime. The main objective is to define a single chain multi-dimensional feed forward network where soon after the birth of any individual, an online database can be generated against the unique identification number, where all morphological and vaccination measures can be recorded for developing safe pork/chevon traceability system in the meat processing industry to prevent any sort of adulteration the processing of the meat. Multi-dimensional pattern denotes the identification of the breed of animal, it pertains to, after being individually recognized following the identification.

Different registered goat and pig breeds such as Sirohi, Beetal, Jamunapari, Barbari and Black Bengal for Goats and Ghungroo, Yorkshire, Hampshire, Niangmegha and Duroc in case of Pigs are the registered breeds in India and the accuracy of identifying such breeds came out to be more than 95% under controlled and uncontrolled environment. However, fallacies lie in the case where a Black Bengal goat and Jamunapari or Beetal look somewhat similar in some cases under worst conditions and eventually lead to the miscalculation of result.

The meat processing industry may get widely benefitted by the concept of such developments and feed forward traceability system signifies the result of previous node helping in filtering the desired ultimate result. Any change in the result of the previous node affects the filtration of the result for the upcoming node.

With such advancement in technology and development in research for finding out the most feasible biometric character trait, all animals in the livestock sector may get identified where the concept of blockchain might eventually be incorporated to develop an intelligent recurrent network for generating the most desired result. The training and validation might take place in the ratio of 80:20 with desired features extracted in each layer of perception and reinforcement.

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